

HTIS



Hazardous Technical Information Services
BULLETIN

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MSDSs – Common Customer Concerns

Tom McCarley, Chemist and Fred Tramontin, Chemical Engineer, HTIS

No environmental, health and safety request with which we deal is more misunderstood than the requirements governing Material Safety Data Sheets (MSDSs). In this article we will address three common concerns that our customers seem to have regarding MSDSs. Hopefully, the information provided herein will provide the reader with a better understanding of the issues, and serve as a catalyst for meaningful discussions.

The MSDS requirement is based on the Occupational Safety and Health Administration's (OSHA's) Hazard Communication Standard (HCS) regulation codified at 29 CFR 1910.1200; and specifically at 29CFR 1910.1200 (g). The HCS

is frequently referred to as the "HAZCOM STANDARD" and has other paragraphs and sections that address the issues of hazard warning labels, written HAZCOM plans and the like. The DOD implements its worker right-to-know requirements via DOD-I 6050.5 (DOD Hazard Communication Program).

The Federal Government's repository of MSDSs and related value-added information (logistics, transportation, etc.) is contained in the Hazardous Materials Information Resource System (HMIRS), formerly known as HMIS, and is available to registered Federal government employees and government contractors at <http://www.dlis.dla.mil/hmirs/>. There are separate registration forms, for U.S. government employees and for U.S. military/government contractors who support

The HTIS Bulletin is designed to keep DOD personnel informed of technical and regulatory developments on the environmentally safe management of hazardous materials and wastes. For technical inquiries, call **DSN 695.5168** or commercial **804.279.5168** or toll free **800. 848.4847**

hazmat/environmental operations at U.S. government facilities, which must be completed before access can be granted. Since being granted access to HMIRS may take several workdays, we advise those desiring access to plan ahead, and not wait until the 11th hour when an MSDS is urgently needed. Because the Defense Logistics Agency (DLA) and especially the Defense Supply Center Richmond (DSCR) manage many assets that meet the definition of hazardous as set forth in 29CFR1910.1200 those looking for a particular MSDS should call us.

Concern #1 - "I called you folks in Richmond and you referred me somewhere else".

Please try to understand that it is not that we do not want to help, but at DSCR we can offer the most effective and efficient assistance for those assets that the DLA uniquely manages for the Federal community. DSCR is the DLA focal point for DOD HMIRS, but, we simply do not have access to all the logistics and other information for hazardous items managed by other than DLA. The General Services Administration (GSA) as well as the Military Services and/or

Agencies manage certain of the commodities (e.g. GSA manages paints, lacquers, and adhesives) for which their HMIRS focal points are more uniquely qualified to provide MSDS assistance. You may wish to review the May-June 2003 HTIS Bulletin article "I Need an MSDS" for a list of HMIRS MSDS POCs (<http://www.dscr.dla.mil/htis/mayjun03.pdf>). If the appropriate "avenue" to obtain information has been unsuccessful, we will gladly try and assist you.

Concern #2 - "The ingredients on my MSDS do not add up to 100%" or "the amount present expressed in percentage is not listed"

OSHA, in its HAZCOM Standard, does not require the MSDS preparer (responsible party) to either provide the percentage composition for the listed constituents or to list non-hazardous ingredients on an MSDS. The concern and confusion that this creates is understandable. Since the mid 1990's, Federal facilities have been subject to another regulation, the EPA's Emergency Planning and Community Right-to-Know Act (EPCRA), where the information on an MSDS is commonly used. Where EPCRA is referred to as

"Community Right-to-Know", HAZCOM is known as "Worker Right-to-Know". Because the reporting requirements of the Toxic Release Inventory (TRI) of EPCRA require compositional information on certain hazardous chemicals, people look to the MSDS for that information, and are sometimes disappointed not to find it. In response to EPCRA reporting challenges, the Services/Agencies have undertaken various "tracking" programs with acronyms such as "HMMS", "HSMS", etc. to track the usage of hazardous materials at their facilities. Such tracking programs will typically require the input of percentage data that are not required by OSHA's HAZCOM. Also recall that contractors usually provide the government with the same MSDSs that they would provide to their non-government customers. The subject of tracking programs brings us to the most current concern.

Concern #3 - "At this installation, I can not use an MSDS that is more than 'x' (where x is typically 2 or 3) years old"

Since we are hearing this concern with greater

frequency, HTIS believes that we need to elaborate on it. First, some observations followed by a discussion.

OBSERVATIONS:

OSHA's Haz Comm Std (29CFR1910.1200) does not require an MSDS's responsible party to update its MSDSs in accordance with any update or maintenance schedule.

When an MSDS's responsible party becomes newly aware of any significant information regarding the hazards of a chemical or ways to protect against the hazards, the responsible party must add this information to the MSDS within three months.

A responsible party must provide an updated MSDS, to its downstream customer, the next time that the product is provided to or procured by that downstream customer. Recall that OSHA defines a responsible party to be "someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary" (29CFR1910.1200(c)). In essence, the responsible party is the entity who created the MSDS and whose name, address, phone number, and

product identification usually appear within the contexts of Section 1 of an MSDS (i.e. identification or manufacturer identification).

Not all companies elect to update their MSDSs on a periodic schedule. If the MSDS is updated, the updating can vary from division to division within a company as well as for the various product lines within a division.

MSDSs entered to the DOD HMIRS are maintained for 40-50 years. Hence, a Product Record in HMIRS is "updated" whenever a contract awardee submits an MSDS that is more current than or different from one already in the system for either an NSN assigned asset or locally procured one. Furthermore, the submitted MSDS needs to accurately reflect the product that the contractor will be providing the government under the terms of the awarded contract.

HMIRS focal points are not responsible for obtaining MSDSs that meet a particular installation's MSDS date currency (i.e. 2 years) needs. Rather, they are responsible for providing the MSDS that is reflective

of the item in the contract awarded and stock issued.

If an installation has a policy that MSDSs must be no older than some pre-determined date and the MSDSs in the DOD HMIRS do not reflect the desired date range, then the installation will need to contact the MSDS responsible party to obtain it. Although the MSDS will reflect the desired date range, it will not reflect the chemical make-up of the asset in hand if formulation changes have occurred between the time that the asset in hand was actually produced and the date on the "updated" MSDS provided. We do believe that as one starts contacting a number of companies for a "two year or more recent" MSDS, one will start to realize the impracticality of such a policy in light of current OSHA regulations.

Hazmat material being returned to stock or sent to disposal need an MSDS that accurately represents the material that is being restocked or disposed. That MSDS may be an older MSDS rather than an updated one.

DISCUSSION:

OSHA's HAZ COM STD (29CFR1910.1200(g)) does not require the MSDS's responsible party

to update an MSDS within any fixed period of time except when the MSDS's responsible party *"becomes newly aware of any significant information regarding the hazards of a chemical, or ways to protect against the hazards"*. When this occurs, *"this new information shall be added to the material safety data sheet within three months."*

Furthermore, an MSDS that has been updated is to be provided the next time that the product is provided/procured.

The government acquires MSDS via the procurement process; that is, the government places a solicitation for a given asset and requires the bidders or successful supplier to provide an MSDS and Hazard Warning Label (if required) in accordance with FAR 52.223-3 and DFAR 252.223-7001 prior to contract award, if the asset meets the definition of a hazardous material as set forth in 29CFR1910.1200 and/or FED STD 313D. The successful offeror's MSDS is forwarded to the HMIRS's focal point that represents the Service or Agency procuring the asset so that the focal point can review and electronically scan the MSDS, as well as generate

the value-added data. Please note that an MSDS is required each and every time the desired asset is being solicited irrespective of the fact that the same contractor may have been awarded a contract for the same asset at an earlier date.

A contractor/vendor can submit the same MSDS (hence, MSDS date) each and every time **provided that no change has occurred in the information that will affect worker protection.**

Please note what 29CFR1910.1200(g)(5) states: *"The chemical manufacturer, importer or employer preparing the material safety data sheet shall ensure that the information recorded accurately reflects the scientific evidence used in making the hazard determination. If the chemical manufacturer, importer or employer preparing the material safety data sheet becomes newly aware of any significant information regarding the hazards of a chemical or ways to protect against the hazards, this new information shall be added to the material safety data sheet within three months.* If the chemical is not currently being produced or imported the chemical manufacturer or importer

shall add the information to the material safety data sheet before the chemical is introduced into the workplace again; and 29CFR1910.1200(g)(6)(i) states that *if an MSDS is updated*, then the chemical manufacturers or importers shall ensure that distributors and employers are provided an appropriate material safety data sheet with their initial shipment, and *with the first shipment after a material safety data sheet is updated.*

As noted in paragraph two above, the entry of MSDSs to the DOD HMIRS is based upon a Service or Agency HMIRS's focal point receiving an MSDS associated with a contract that had been awarded for the asset desired. Once a given MSDS is received, the appropriate DOD HMIRS Service/Agency focal point technically reviews, electronically scans the submitted MSDS, and generates appropriate value-added information for entry to the DOD HMIRS.

Thus, if a material was manufactured 10 years ago, then the MSDS created 10 years ago would be an appropriate MSDS reflective of that product, provided no significant information regarding the hazards of a chemical, or ways to

protect against the hazards had emerged over the 10 years. Also consider that an updated MSDS associated with an older asset may not be reflective of that asset, especially if the product line has undergone formulation changes over the years. This is especially true for assets that are procured in accordance with performance specifications rather than "compositional" specifications in which the desired constituents are clearly identified or specified. In addition, manufacturers may choose to "modify" product formulations over time while maintaining the same product name or identification. Hence, if one had a product in hand that was manufactured in 1998, and the manufacturer decided to make a formulation change in 2003, for environmental reasons, the most current MSDS that would be provided, if requested today, would be the MSDS reflective of the 2003 product formulation and not the 1998 formulation. This difference could have a significant role in how one handled, used and/or disposed of the product. Consider the fact that unless a manufacturer adds and/or removes constituents that are defined to be hazardous or

becomes newly aware of any significant information regarding the hazards of a chemical or ways to protect against the hazards, they can continue to provide a customer with the same MSDS year after year after year.

Herewith are some examples of assets and/or Federal Supply Classes (FSCs) in which one would find little if any changes in the product MSDS from year to year: acetone or sulfuric acid in FSC 6810 or oxygen or nitrogen gases in FSC 6830 or welding rods or solder in FSC 3439. In addition, one encounters many instances in which contractors/vendors will submit various editions of a specific manufacturer's or responsible party's MSDS for a given product (e.g. acetone). For example, vendor X submits manufacturer's Y MSDS dated 2003 for product Z this month and eight to 12 months later this same contractor X may be awarded another contract for product Z in a different size, and submits Y's MSDS dated 2000. Both MSDSs represent Y's product Z; all that is different is the date of the MSDS where the most recent procurement has been provided with the older dated MSDS. Hence, the reason for HMIRS having the

capability of including the contract numbers associated with the submitted MSDS.

Unlike Australia's OHSA regulations, the U.S. does not mandate that a manufacturer review and revise an MSDS at intervals not exceeding 5 years, therefore, we find that there is great variation among major U.S. manufacturers in the frequency with which they update their MSDSs. Even with these manufacturers, their MSDS maintenance schedule can vary from division to division and for the various product lines within a division. We suspect that as other nations follow Australia's lead and begin to mandate the updating of MSDS at intervals not exceeding 5 years, multi-national companies operating in a global marketplace will begin to update their MSDSs on a fixed schedule for their global customer base. Until this occurs in the U.S., manufactures will update their MSDSs in accordance with OSHA's requirements as set forth at 29CFR1910.1200(g)(5) and referenced in earlier paragraphs. Also consider the fact that the government procures numerous chemical assets from small businesses, and one can quickly see some

of the challenges that the HMIRS focal points encounter with respect to the currency of submitted MSDSs.

Since January 2000, the DLA HMIRS focal point at DSCR has entered the contract number for DLA managed assets so that its customers could match the product in hand with the vendor submitted MSDS. In theory, this should enable one to trace all MSDSs associated with any given NSN over the years. With the introduction of the contract number field in the HMIRS, one now has the ability to conduct very selective searches for one-to-one matches of product, contract number and MSDS.

A Service/Agency's HMIRS designated focal point receives MSDSs for entry to the HMIRS from its various Service/Agency procuring/contracting entities, whether they are Inventory Control Points (Integrated Material Manager) and/or Installations. Installations are responsible for obtaining MSDSs for locally purchased hazardous assets, that is, those assets purchased outside the central supply system. Major command and installation policies establish the guidance and protocol that must be

followed. However, if an activity does not forward an MSDS to its designated HMIRS focal point for the locally purchased asset, then that MSDS will not appear in the HMIRS for the contract/purchase in question. A Service or Agency HMIRS's designated focal point technically reviews, electronically scans the contractor's submitted MSDS, and then generates value-added information based on the contents of this vendor/contractor submitted MSDS. Thus an HMIRS product record is updated whenever a contractor submits an MSDS for the product that will be provided to the government under a given contract. This submitted MSDS must be different in content (e.g. date, formulation, health and safety factors, etc.) from the "comparable MSDS"/product record already present in HMIRS. Once entered into HMIRS, the MSDS is maintained 40-50 years, and may be moved to an archived status after a given time period. Also note that contractors are under no contractual obligation to provide a procuring activity (wholesale buyer/manager of a cited NSN) with an updated MSDS for any past contract, especially if they provided an appropriate MSDS at the time of

contract award. For example, if a specific contractor (CAGE) is awarded a contract tomorrow, they could still submit a 2, 4, 6 or X year old MSDS provided that no significant information regarding the hazards of a chemical contained therein, or ways to protect against the hazards became known or that key manufacturer/responsible party information (address, phone number, product name) has changed.

OHSA's HAZCOM regulations do not require the MSDS responsible party to provide an updated MSDS until the first shipment of an asset after an MSDS has been updated. Since the government's procurement practices and needs are such that assets can be provided by various contractors and at various times, the government will not obtain an updated MSDS from a contractor until a contract is awarded to that contractor X years from the time of the previous contract. For example, if the MSDS responsible party updates an MSDS six months after a contractor has completed delivery of the assets specified by a given contract, the government will not acquire the updated MSDS until a contractor is awarded another contract to provide

the desired asset. The requirement for this asset might occur at some unspecified time in the future and depends on a user's demand for the asset. Hence, personnel need to re-examine a given location's policy of returning or disposing of received assets in terms of the time, labor, transportation as well as disposal expenses incurred by both the government and the taxpayer when the respective MSDSs' dates for those assets do not reflect a location's desired date range (e.g. 2, 3 or 5 years), but when a valid MSDS is available that accurately reflects the product in hand and meets OSHA's right-to-know requirements.

Finally, an MSDS having today's date is invalid if it does not represent the material one has in hand and probably violates the spirit and letter of OSHA's MSDS requirement.

These three concerns are but three of the those that we hear from time to time and we hope that our customers will take the information provided in the spirit with which it is intended; that is, a better understanding of the HAZ COM regulation and a catalyst for meaningful discussion on acquiring MSDSs, as well as MSDS

policies at your installation.

EPA Designates Ozone Health Standards The Clean Air Rule of 2004

Abdul H. Khalid,
Chemical Engineer, HTIS

On April 15, 2004, the U.S. Environmental Protection Agency (EPA) issued designations on ozone health standards. These designations refer to the EPA's term that describes the air quality in a given area of six common air pollutants (ozone, carbon monoxide, nitrogen dioxide, particulate matter, sulfur dioxide, and lead) known as "Criteria Pollutants". Ground-level ozone is one of the six common air pollutants, which is unhealthy to breathe. These pollutants can injure health, harm the environment, and damage property. Ozone causes asthma, lung damage, and difficulty in breathing. This rule becomes **effective on June 15, 2004**. States and communities are required to prepare plans to reduce ground-level ozone. According to the EPA Administrator Mike Leavitt, the new ozone designations do not represent failure but they are about the understanding of health

threats and tougher standards to improve the nation's air quality.

National Ambient Air Quality Standards (NAAQS) are the main features of the Clean Air Act (CAA) and set goals for attainment of cleaner air. Public sectors that include DOD facilities are involved in the emission of hazardous air pollutants (HAPs) from stationary and moving sources. A detailed article titled "**Hazards of Criteria Air Pollutants**" is referenced here for our readers. (The Hazardous Technical Information Services (HTIS) Bulletin, Vol. 1, No. 5, Winter 1991/1992).

The EPA defines area as non-attainment if it has violated or has contributed to violations of the national 8-hour ozone standard over a three-year period. The EPA may also designate an area as attainment/unclassifiable, if it has: (1) monitored air quality data which show that area has not violated the ozone standard over a three-year period; or (2) if there is not enough information to determine the air quality in the area. The designations process plays an important role in letting the public know whether air quality in a given area is healthy. Once designations take effect, they also become an

important component of state, tribal and local governments' efforts to control ground-level ozone.

The Clean Air Rules of 2004 (Interstate Air Rule, Mercury Rule, Non-road Diesel Rule, Ozone rules and Fine Particle Rules) are the combined actions that will improve air quality. Out of these rules, three (the Interstate Clean Air Rule, Mercury Clean Air Rule and Non-road Clean Air Rule) specifically address the transport of pollution across state borders. These rules provide national tools to achieve significant improvement in air quality and the associated benefits of improved health, longevity and quality of life for all Americans. The EPA considers this a combined action and projects that the next 15 years will be the most productive periods of air quality improvement in American history.

The key elements of the program to implement the 8-hour ozone NAAQS are available online at: <http://www.epa.gov/ozone/designations/finalrule.pdf>. Further information on the EPA's designations, the Clean Air Rules of 2004, and Early Action Compacts is available from the EPA's web page at:

1. <http://www.epa.gov/ozonedesignations>
2. <http://www.epa.gov/cleanair2004>
3. <http://www.epa.gov/air/eac/>.

DOD personnel interested in the implementation of the 8-hour ozone NAAQS and other issues along those lines should contact: Mr. John Silvasi, Office of Air Quality and Standards, U.S. EPA. Phone: 919-541-5666, e-mail at: silvasi.john@epa.gov or Ms. Denise Gerth, OAQS, EPA, phone: 919-541-5550 or e-mail at: gerth.denise@epa.gov

Reference: EPA's National News at: <http://yosemite.epa.gov/op/admpress.nsf/b1ab9f485b098972852562e7004dc686/f2673d2323be58b385256e77005aa9af?OpenDocument>

EPA Finalizes Changes to Risk Management Plan Rules Under 112(r)

Tom McCarley, Chemist, HTIS

Military installations with large stored quantities of certain hazardous chemicals and that file risk management plans (RMPs) under the provisions of Section 112(r) of the Clean

Air Act Amendments need to be aware of changes to the reporting requirements in a final rule promulgated and effective April 9, 2004. Many of the changes are an outfall of recent homeland security concerns. Changes include:

- Beginning June 21, 2004, chemical facilities subject to the accident prevention regulations submit information on any significant chemical accidents and any changes to emergency contact information on a more timely basis than previously required.
- The immediate removal of regulatory requirement for covered facilities to include in the executive summaries of their risk management plans (RMPs) a brief description of the off-site consequence analysis (OCA) for their facilities. The off-site consequence analysis remains a controversial aspect of the RMP as a number of authorities wrestle with the notion that such analysis could be

“blue print” for terrorists looking to strike at a fixed hazardous chemical facility.

- Requires that, beginning June 21, 2004, covered facilities include three new pieces of information in their RMPs: the e-mail address for the facility emergency contact, the name, address and telephone number of the contractor who prepared the RMP, and the purpose of any RMP submission that changes or otherwise affects an earlier RMP submission.
- Clarifies that the deadline for updating RMPs that were submitted before or on June 21, 1999, is June 21, 2004, except for those facilities required to update their RMPs as a result of changes at the facility.
- Revisions to the format for submitting RMPs (RMP*Submit), including expanding the list of options for possible accident causes to include uncontrolled chemical reactions.

These changes to the RMP reporting requirements are intended to improve the accident prevention and reporting programs of covered facilities, and to assist federal, state, and local RMP implementation in light of new homeland security concerns, according to the EPA.

Reference: Federal Register, Vol. 69, No. 69, pp 18819-18832, April 9, 2004

EPA Issues Rule to Meet HAPs Emissions Under the CAA

Abdul H. Khalid,
Chemical Engineer, HTIS

On April 19, 2004, the U.S. Environmental Protection Agency (EPA), issued a final national emission standards for hazardous air pollutants (NESHAPs) for plastic parts and products surface coating operations located at major sources of hazardous air pollutants (HAPs). The EPA has the authority to implement regulations under the Clean Air Act (CAA) Section 112(d). According to the recent announcement in the Federal Register, surface coating of plastic parts and products must meet the HAPs emission standards reflecting the application of the maximum

achievable control technology (MACT). The final rule discusses the applicability, emissions, operating limits, work practice standards, performance testing, compliance provisions, notification, recordkeeping, and reporting requirements. **The final rule became effective on April 19, 2004.**

The EPA expects that the final standards, when fully implemented, will reduce nationwide HAPs emissions from major sources in the processes of surface coating of plastic parts and products by about 80 percent, thus, protecting air quality and promoting better public health. Generally, the organic HAPs emitted from such operations are: methyl ethyl ketone (MEK), methyl isobutyl ketone (MIBK), toluene, ethylene glycol monobutyl ether (EGBE) and other glycol ethers, and xylenes. Toxicologists studied the exposures to these substances and claim that these organic HAPS have potential to cause adverse health effects that include irritation of the lung, skin, and mucous membranes, and effects on the central nervous system, liver, and heart.

The EPA has discussed some examples of

potentially regulated facilities in the final rule. Federal, state, and local government owned or operated facilities that perform plastic parts and products surface coating with the exception of those that meet the criteria stated in the current regulations are included.

For additional information or details on this final rule, you should reference and visit the EPA's web site at: <http://a257.g.akamaitech.net/7/257/2422/14mar20010800/edocket.access.gpo.gov/2004/pdf/04-9.pdf>. For further information on how to implement this rule, please contact Ms. Kim Teal, Coatings and Consumer Products Group, Emission Standards Division (C539-03), U.S. EPA, Research Triangle Park, NC 27711, phone: 919-541-5580; Fax at: 919-541-5689 or e-mail at: teal.kim@epa.gov.

Reference: Federal Register, April 19, 2004, Vol. 69, No. 75 pages 20967-21022, online at: <http://a257.g.akamaitech.net/7/257/2422/14mar20010800/edocket.access.gpo.gov/2004/pdf/04-9.pdf>.



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EPA's Memo on Satellite Accumulation

Tom McCarley, Chemist,
HTIS

One of the mostly frequently posed questions to us at HTIS involves the regulations (or lack thereof) of hazardous waste satellite accumulation areas. Although you won't find the term "satellite" in the applicable hazardous waste regulations (40 CFR 262.34), the concept of accumulating waste in a container "at or near the point of generation" and "under the control of the operator" has offered great flexibility with thousands of hazardous waste generators. The greatest benefit of a satellite container is that the usual 90 or 180-day (if Small Quantity Generator) clock associated with generator containers does not apply. Think of a satellite accumulation area as allowing an infinite amount of time to accumulate a finite amount of waste. That amount of waste is strictly limited to 55 gallons or one quart if acutely toxic.

The EPA's Office of Solid Waste (OSW) has been working on a Question and Answer set for satellite accumulation as requested

by numerous generators for a long time. That interpretive memorandum was issued in a March 17, 2004 Memo from OSW Director Robert Springer to the ten EPA Regional RCRA Directors. The memo consists of a set of 14 Questions and Answers and a handy table showing container compliance regulations for Satellite, Large Quantity generator, and Small Quantity generator container areas.

The nine-page memo in pdf format can be downloaded from the HTIS web site at <http://www.dscr.dla.mil/htis/epasafaq.pdf>

Based on the questions we field concerning satellite accumulation, questions 9 and 10 of the memo are especially clarifying. The memo makes it clear that your installations may have numerous satellite areas and that each area can accumulate multiple wastes as long as the sum total of **ALL** hazardous wastes at **EACH** satellite area does not exceed 55 gallons.

Our military installations have used satellite accumulation areas to a great advantage, primarily because it is a tremendous convenience to be able to keep small amounts of waste, in a designated area, at or near a work site

for a period of time without having to transfer it daily. If you are responsible for hazardous waste management at your facility, then this memo is a must for your files.

References: 1. EPA Office of Solid Waste Memorandum, Robert Springer to the EPA Regional RCRA Directors, March 17, 2004 2. Presentation by Kristin Fitzgerald, EPA, to the American Chemical Society, Chemical Health and Safety Division at its September 2003 national meeting. 3. E-mail transmittal of memorandum from Kristin Fitzgerald 6 April 2004.

ETV Program Reviews Indoors Air Filters for Bioagent Protection

Tom McCarley, Chemist, HTIS

The EPA's Environmental Technology Verification (ETV) program is a voluntary partnership with other Federal and contractor experts that seek to verify the environmental performance characteristics of commercially ready and available technologies through the third party evaluation of objective and quality assured data so that potential purchasers and

permitters are provided with an independent and credible assessment of what they are buying. As a voluntary program, it should be emphasized that verified technologies are not "approved" by the EPA, but rather the third party verification is additional credible data that potential purchasers and users of ETV technologies can consider when making decisions.

Of the technology areas being examined, perhaps none is more critical at this point in time than those, which examine homeland security technologies. As an example, in March 2004, the EPA completed its review of ten indoor air filters designed to protect building occupants from bacterial, viral, and other biological warfare agents. The ten filters were examined for their efficiency at removal of bioagent particles down to 0.03 microns in size. Interested readers can review the verification reports and statements for each of the examined filters at <http://www.epa.gov/etv/verifications/vcenter10-1.html>

Further information on the ETV program and its technologies can be found at the ETV website at <http://www.epa.gov/etv/>

References: 1. EPA Press Release, March 16, 2004 "EPA Completes Performance Verification on Indoor Air Filters that Protect Against Biological Threat Agents". 2. Air filters ETV data - <http://www.epa.gov/etv/verifications/vcenter10-1.html> 3. ETV information at Pittcon Analytical Chemistry Conference, March 2004.

Placarding

Muhammad Hanif, Chemist, HTIS

Hazard markings, labels and placards are a common approach to alert the public and emergency responders to a hazard that they may encounter in emergencies. The distinctive Department of Transportation (DOT) system of placarding provides a visual clue for responders to a hazardous material (HM) incident. Emergency responders (ERs), who respond to HM incidents, are often volunteer fire fighters, local sheriff deputies or the highway patrol. When responding to an accident or emergency, these individuals ERs are trained to look for DOT placarding and HM shipping papers. The primary objective of DOT placarding is to alert the public and transportation workers to the presence of

HM that are being transported in bulk or non-bulk packaging, rail cars, cargo tanks, or portable tanks.

Generally, placarding is used to ***communicate the presence of a hazard*** to transport workers, the general public, and first responders. Selecting, providing, or affixing placards for a freight container or transport vehicle to indicate that it contains a HM is also a pre-transportation function (see Jan-Apr 2004 issue of the HTIS Bulletin).

The best practice is to comply with all of the regulations unless an exception for placarding is found in the hazardous material regulations (HMR). This article provides a general overview of the placarding requirements for highway transportation that forms the backbone of emergency response. Requirements for placarding are dependent upon the identity and quantity of the HM shipped. Placards are used to represent the hazard classes of materials contained within freight containers, motor vehicles or rail car. Labels communicate the same hazards for smaller containers and packages offered for transport. Markings on HM

packaging convey specific information about the enclosed hazard and the person responsible for that material.

Both bulk and non-bulk shipments of hazardous materials must be placarded under certain circumstances. Placarding is dependent upon the identity and quantity of the HM being shipped. Placards for various materials are specified in placarding "Table 1", and "Table 2" of [49CFR172.504\(e\)](#). **Any quantity of a HM listed in placarding Table 1 must be placarded.** The HM listed in placarding Table 1 include:

Explosives (Division 1.1, 1.2, 1.3)
Gas poisonous by inhalation (Division 2.3)
Dangerous when wet material (Division 4.3)
Organic Peroxide, Type B, liquid or solid, temperature controlled (Division 5.2)
Poisonous material (Division 6.1), inhalation hazard, Zone A or B
Radioactive (Class 7) materials

All other classes and divisions of HM fall under placarding Table 2 of [49CFR172.504\(e\)](#). The HM listed in Table 2 include:

Explosives (Division 1.4, 1.5, 1.6)

Compressed Gases (Division 2.1, 2.2)
Flammable and Combustible Liquids (Class 3)
Flammable Solids (Division 4.1, 4.2)
Oxidizers (Division 5.1)
Organic Peroxides (Division 5.2; other than Type B liquid or solid temperature controlled)
Poisons (Division 6.1; other than inhalation hazards Zone A or B)
Infectious Substances (Division 6.2)
Corrosives (Class 8)
Miscellaneous (Class 9)
Consumer Commodities (ORM-D)

Each bulk packaging containing any quantity of a HM in Table 1 or Table 2 must be placarded for each hazard class contained in the bulk packaging. When Table 2 material over 1000 pounds (454 kilograms) aggregate gross weight (weight of the package plus the contents) is transported in non-bulk packaging, the motor vehicle or freight container must be placarded. Paragraph (c) of [49CFR172.504](#) provides a placarding exception for non-bulk packaging containing less than 1001 pounds (454 kilograms) aggregate gross weight (AGW) of HM covered by placard Table 2. There are two situations where a Table 2 material

must be placarded for any quantity:

1. When a Table 2 material is transported in a bulk packaging including transport vehicle and freight container. A bulk packaging is defined as a single container with: a) a water capacity greater than 119 gallons (450 liters) for liquids; b) a net mass greater than 882 pounds (400 kilograms) and a maximum capacity greater than 119 gallons (450 liters) as a receptacle for a solid; or c) a water capacity greater than 1,000 pounds (454 kilograms) as a receptacle for a gas.

2. When a Table 2 material is transported in a non-bulk packaging and requires a compulsory subsidiary hazard placard as stated in 49CFR172.505. Subsidiary hazards identified in Column 6 or 7 of the HM Table 172.101 that require a placard are: (a) Poison Inhalation Hazards (PIH), (b) Division 4.3 (Dangerous when wet); and (c) Class 7 (Radioactive) material with a Corrosive subsidiary. All other subsidiary hazards **may be placarded, but are not required to be placarded.**

It is also important to emphasize that only non-bulk packagings (drums,

fiberboard boxes, etc.) containing quantifiable amounts of hazardous materials contribute to the 1,001 pounds (454 kilograms) threshold requiring placards for shipments of hazardous materials covered by placarding Table 2. Per HMR, at [49 CFR 172.504\(d\)](#), non-bulk packaging that contains only the residue of a hazardous material listed in placarding Table 2 is not considered when determining the required placard. DOT provides placarding exceptions only for emptied non-bulk packagings containing the residue of a hazardous material listed in Table 2 of [49 CFR 172.504\(e\)](#) and for class 9 materials.

According to 49CFR172.506, a shipper is required to provide the appropriate placards to a motor carrier prior to or at the time the placardable amount or type of HM is offered for transportation, unless the carrier's motor vehicle is already placarded as required. A motor carrier may not transport a hazardous material that requires placarding without the appropriate placards displayed properly on the vehicle. In accordance with 49CFR172.514, a shipper must, however, **affix the appropriate placards on the bulk**

packaging when offering it for transportation.

The bulk packaging must remain placarded when it is emptied, unless it is sufficiently cleaned of residue and purged of vapors; or refilled, with a material requiring different placards or no placards, to such an extent that any residue remaining in the package is no longer hazardous.

In accordance with 49CFR172.504(a), all bulk packagings containing any quantity of a hazardous material must be placarded on each side and each end with the appropriate placard. When the placard of the bulk package cannot be seen because it is inside a transport vehicle, then the transport vehicle must also be placarded on all four sides. The transport vehicle is not required to be placarded on any side if the placards on the bulk package are visible. For a single vehicle, the placard must be visible when standing at the front of the vehicle. When combination vehicles are used in transporting a placardable material, the placard may be displayed on front of the tractor or on the front of a semi-trailer. The following containers may be placarded on two sides or labeled in lieu of placarding: A portable tank having a capacity of

less than 1,000 gallons; A DOT 106 or DOT 110 multi-unit tank car tank; or a bulk packaging (e.g. a bulk bag or box) other than a portable tank, cargo tank, or tank car with a volumetric capacity of less than 640 cubic feet; and an intermediate bulk container. **A vehicle transporting these packages must still be placarded on all four sides.**

The Dangerous placard is an option, not a requirement. When two or more categories of Table 2 materials in non-bulk packages that require different placards are transported in the same vehicle, the Dangerous placard may be used instead of the separate placarding specified for each of the materials in placard Table 2. The Dangerous placard cannot be used when a shipment of 2205 pounds (1000 kg) AGW or more of **one category** of Table 2 materials is loaded from a single loading facility. In this case (i.e. 2205 pounds AGW or more loaded from one loading facility), the placard specified in Table 2 for that category must be displayed.



Placards cannot be displayed unless a hazardous material is being transported and the placard represents the hazard(s) of the material contained within freight containers, motor vehicles or rail car. Placards may be displayed for a hazardous material even if it is not required, provided the provisions for placarding are met. To comply, shippers and carriers must ensure that placards are displayed properly. Although placard holders are permitted but not required, affixing placard to a surface with tape or similar adhesives on the edges is legal provided the placard is not obscured. When displayed, the placard must read horizontal, left to right, must be free and clear of dirt, and must be free of accessories such as piping and ladders. To prevent confusion, the placards must be placed away from words of advertisements. The placard must meet design, size, and color specifications. Offering or displaying faded placard is in violation of placard specification. It is also illegal to display the placards on mud flaps, low bumpers, and underneath flatbed frames.

There are a number of placarding **exceptions**, which allow a "higher"

hazard placard to provide for "lower" hazard materials that are transported on the vehicle. For example, a Non-flammable gas placard is not required if the vehicle is displaying a Flammable gas placard, as required. An Oxidizer (Division 5.1) placard for Division 5.1 material is not required if the vehicle is displaying an Explosives (Division 1.1 or 1.2) placard. Additional placarding exceptions can be viewed at [49CFR172.504\(f\)](http://www.ecfr.gov/cgi-bin/49cfr/172.504(f))

Since placards are used to represent the hazard classes of materials contained within freight containers, motor vehicles or rail cars, shipments of the following types of hazardous materials are not subject to the placarding requirements:

Infectious substances
Hazardous materials classed as ORM-D,
Hazardous materials offered for transportation as Limited Quantities and identified as such on a shipping papers in accordance with 49CFR172.203(b),
Hazardous materials (Class 3, 8 or 9, or Division 4.1, 4.2, 4.3, 5.1, or 6.1) hermetically sealed in containers in accordance with 49 CFR 173.13,
Hazardous materials that are packaged as small

quantities in accordance with 49 CFR 173.4, Combustible liquids transported in non-bulk packagings and, Under certain conditions, batteries prepared for transportation in accordance with 49CFR173.159. In accordance with 173.29, empty non-bulk packagings containing only the residue of a hazardous material except materials with mandatory subsidiary hazard placard. Empty bulk packagings when cleaned and purged of vapors or refilled with non-hazardous material

References: 1. 49CFR172, Subpart F-Placarding 2. 66FR33315 Jun 21, 2001

NIOSH Issues First Certifications for Respirators Used to Protect Against CBRN Exposures

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On March 16, 2004, the U.S. National Institute for Occupational Safety and Health (NIOSH) issued its first two certifications under the program for testing and certifying air-purifying respirators. These two certifications are firsts under this program and are intended to protect emergency responders from chemical,

biological, radiological, and nuclear (CBRN) exposures.

After the 9/11 incidents, NIOSH launched a new program to test and certify respirators for use by emergency responders against CBRN exposures with input and support by outside partners. NIOSH issued new criteria for testing and certifying self-contained breathing apparatus for CBRN before the end of 2001. These devices are the type of respirators most likely to be used by responders who are first on the scene at potential terrorist incidents.

According to this NIOSH update, the agency issued these certifications on March 12, 2004, and March 15, 2004, respectively. The names and the approval numbers are listed below:

- MSA Millenium APR, manufactured by Mine Safety Appliances Co. (MSA), Pittsburgh, PA; the approval number for this air purifying is **TC-14G-0270**.
- 3M FR-M40, manufactured by 3M Corp., Maplewood, MN: the approval number **TC-14G-0271**.

These certifications mean that the respirators are expected to protect firefighters and other emergency responders from CBRN related respiratory exposures. NIOSH based its determinations on positive results from rigorous laboratory tests, evaluation of product specifications, and assessment of the manufacturers' quality control procedures. NIOSH has tested and evaluated the devices under criteria that it announced in March 2003. All new certifications for air-purifying respirators for CBRN will be posted, upon issuance, at: www.cdc.gov/niosh/nppt/cbrnaprcheck.html. This update is available online at NIOSH web site at: <http://www.cdc.gov/niosh/updates/upd-03-16-04.html>.

For additional information on the NIOSH certification program for air purifying respirators for protection against CBRN exposures, testing requirements, and criteria for certification, please contact or call NIOSH toll-free at phone: 1-800-35-NIOSH (1-800-356-4674) or visit the NIOSH web site at: <http://www.cdc.gov/niosh/homepage.html>. For details on this update, contact Fred Blosser at phone: 202- 401-3749.

Reference: NIOSH Update
March 16, 2004 at:
[http://www.cdc.gov/niosh/
updates/upd-03-16-
04.html](http://www.cdc.gov/niosh/updates/upd-03-16-04.html)

EPA Clarifies ODS Venting Prohibitions to CFC and HCFC Substitutes and Blends

Tom McCarley, Chemist,
HTIS

The Environmental
Protection Agency (EPA)
updated its regulations
concerning the venting of
chemicals used as
substitute refrigerants
under Section 608 of the
Clean Air Act
Amendments of 1990.
The new rule became
effective May 11, 2004.

The original rule
prohibiting such substitute
refrigerant venting and
release became effective
November 15, 1995. With
this rule, published in the
March 12, 2004 Federal
Register, the EPA is
extending and clarifying
the rule to even those HFC
and PFC refrigerant blends
which have no or very
limited ozone depleting
potential but where the
EPA has not specifically
ruled them exempt from
the venting prohibitions
for ozone depleting
substance (ODS). The
rule does not extend the

refrigerant sales restriction
to pure HFC and PFC
refrigerants. This rule does
exempt from the venting
prohibition certain
refrigerant substitutes for
which the EPA has
determined that their
release does not pose a
threat to the environment.
Refrigerants such as
flammable hydrocarbons,
chlorine gas, and ammonia
are not covered by the rule
because their venting or
release would be covered
under other environmental
or health and safety
regulations.

Effective November 15,
1995, section 608(c)(2) of
the Act prohibits the
knowingly venting,
release, or disposal of any
substitute for CFC and
HCFC refrigerants by any
person maintaining,
servicing, repairing, or
disposing of air-
conditioning and
refrigeration equipment.
This prohibition applies
unless the EPA determines
that such venting,
releasing, or disposing
does not pose a threat to
the environment. This final
rule clarifies how the
venting prohibition of
section 608(c)(2) applies
to substitute refrigerants,
namely HFC and PFC, for
which the EPA is not
determining that their
release does not pose a
threat to the environment.
In addition to establishing
that the venting

prohibition will remain in
effect for HFC and PFC
substitute refrigerants, this
rule clarifies that the EPA
regulations affecting the
handling and sales of
ozone-depleting
refrigerants are applicable
to substitute refrigerants,
primarily HFC refrigerant
blends, containing an
ozone-depleting substance
ODS. The new rule does
not extend the refrigerant
sales restriction to pure
HFC and PFC refrigerants.
This rule does exempt
from the venting
prohibition certain
refrigerant substitutes for
which the EPA has
determined that their
release does not pose a
threat to the environment.

As the second factor in
this remaking, the EPA
has made a determination
regarding whether or not
the release of a substitute
refrigerant during the
maintenance, service,
repair or disposal of an
appliance poses a threat to
the environment. This
determination consists of
two findings.

First, the EPA determined
whether the release of a
substitute refrigerant could
pose a threat to the
environment due to the
toxicity or other inherent
characteristic of the
refrigerant.

Second, the EPA
determined whether and to

what extent such releases or disposal actually take place during the servicing and disposal of appliances, and to what extent these releases are controlled by other authorities or regulations. The release of many substitute refrigerants is limited and/or controlled by other entities, such as Occupational Safety and Health Administration (OSHA) regulations or EPA regulations under other authorities. To the extent that releases during the maintenance, service, repair, or disposal of appliances are adequately controlled by other authorities, the EPA defers to these authorities rather than set up a second duplicative regulatory regime.

As the third factor in this rulemaking, the EPA has considered the availability of technology to control releases, the environmental benefits of controlling releases, and the costs of controlling releases for each class of substitutes. The EPA has identified five classes of substitute refrigerants in the sectors covered under SNAP: HFCs, PFCs, hydrocarbons, chemically active common gases (including ammonia and chlorine), and inert atmospheric constituents (including carbon dioxide (CO₂) and water). The

EPA has divided substitutes into these classes on the basis of the varying environmental impacts of each class and the varying regulatory structures already in place for each class.

The new prohibition regulations will be codified in the regulations at 40 CFR 82.154. The EPA is also modifying the text at 40 CFR 82.150, which covers refrigerant technician training and recordkeeping requirements.

Reference: Federal Register, Vol 69, No. 49, March 12, 2004, pp 11945-11988.

Pharmaceuticals and Personal Care Products (PPCPs)

Beverly Howell, Industrial Hygienist, HTIS

What's the best way to discard leftover or expired medicines?

Once the answer was to "flush 'em", to ensure children or animals couldn't have access to the drugs and be poisoned. Now scientists are increasingly warning against flushing drugs. Antibiotics, hormones and other medicines are being found in waterways, raising worrisome

questions about potential health and environmental effects.

The acronym "PPCPs" was coined in the critical review published in "Environmental Health Perspectives" as shorthand to refer to **Pharmaceuticals and Personal Care Products**. PPCPs comprise a very broad, diverse collection of thousands of chemical substances, including prescription and over-the-counter therapeutic drugs, fragrances, cosmetics, sun-screen agents, diagnostic agents, nutraceuticals, biopharmaceuticals, and many others. This broad collection of substances refers, in general, to any product consumed by individuals for personal health or cosmetic reasons.

Water quality is becoming more of a concern as demand for freshwater increases throughout the world. Technological advancements in industry, agriculture, medical treatment, and common household conveniences have brought increasing concerns for potential adverse human and ecological effects from chemicals present in the environment. Many compounds can enter the environment, disperse, and persist to a greater extent than first anticipated. As a result, there is a wide

variety of transport pathways for many different chemicals to enter and persist in environmental water. Little is known about the extent of environmental occurrence, transport, and ultimate fate of many synthetic organic chemicals after their intended use, particularly pharmaceuticals and personal care products that are designed to stimulate a physiological response in humans, plants, and animals. Until recently, there have been few analytical methods capable for detecting most of the target compounds at low concentrations, which might be expected in the environment.

A June 2002 study by the Toxic Substances Hydrology Program of the U.S. Geological Survey shows that a broad range of chemicals found in residential, industrial and agricultural wastewaters commonly occurs in mixtures at low to very low concentrations downstream from areas of intense urbanization and animal production. The chemicals include human and veterinary drugs, (including antibiotics) natural and synthetic hormones, detergent metabolites, plasticizers, insecticides and fire retardants. Most streams contained one or more of

these chemicals, and about one-third of the streams contained 10 or more of these chemicals. This study is the first national-scale examination of these organic wastewater contaminants in streams and supports the USGS mission to assess the quantity and quality of the Nation's water resources.

Although waste streams from the manufacturing of PPCPs are regulated by the U.S.EPA, once the commercial end product leaves the manufacturing facility federal regulations or guidance only govern the environmental disposition of a select few of these chemicals primarily driven by RCRA regulations.

Drug disposal is a deceptively complex topic and clearly, the old adage of putting pharmaceuticals down the drain or toilet is no longer a desirable method of disposal for homeowners. One of the basic ways not to have excess medications is, of course, to take all of prescribed medicine so there aren't leftovers. Another alternative is to check to see if your pharmacy offers a take-back program or if local household waste facilities will accept excess/unused pharmaceuticals.

Although the long-accepted means of disposing to sewage by flushing down the toilet maximizes the ability of a drug to enter the environment, the rationale behind this approach is to minimize the chances of consumption by others for whom the drug was not intended. The poisoning of adults and children by medications discarded by others is a problem of increasing concern to physicians, but unfortunately, there are no widely available alternative means for drug disposal.

References: 1. Daughton, C.G. and Ternes, T.A., 1999, Pharmaceuticals and personal care products in the environment: Agents of subtle change: Environmental Health Perspectives, v. 107 (Supplement 6), p. 907-938. 2. Jorgensen, S.E. and Halling-Sorensen, B., 2000, Drugs in the environment: Chemosphere, v. 40, p. 691- 699. 3. Sedlak, D.L., Gray, J.L., and Pinkston, K.E., 2000, Understanding microcontaminants in recycled water: Environmental Science Technology, v. 34, p. 509A-515A. 4. U.S.FDA. Guidance for Industry—Environmental Assessment of Human Drugs and Biologics Applications. CMC6,

Revision 1. Washington
DC: U.S. Food and Drug
Administration, 1998.

HazMat Subsidiary Risk Indication Due Date Approaching

Eddie Alvarado and Tom
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Preparers and Certifiers of hazardous materials shipments are reminded of new requirements to indicate the subsidiary as well as primary hazard class on shipping papers (bills of lading etc.). This is one of the new requirements to come from the Department of Transportation rule published in the Federal Register of July 31, 2003 under Docket number HM-215E as part of the continuing updating of our domestic hazardous materials regulations to be in harmonization with international regulations. That lengthy Federal Register final rule contained a host of changes to the hazardous materials transportation regulations of 49 CFR (see page 44993 of that Federal Register for a bulleted list summary of the new changes). The new changes contain a number of effective and mandatory dates; the subsidiary risk indication is effective now and mandatory October 1, 2005.

The subsidiary risk indication is codified at 49 CFR 172.202 as follows:

172.202(a)(2) cites the new subsidiary risk rule: The hazard class or division number prescribed for the material, as shown in Column (3) of the §172.101 Table.

Except for combustible liquids, the subsidiary hazard class(es) or subsidiary division number(s) must be entered in parentheses immediately following the primary hazard class or division number. The words "Class" or "Division" may be included preceding the primary and subsidiary hazard class or division numbers. The hazard class need not be included for the entry "Combustible liquid, n.o.s." 172.202(b) indicates that the proper shipping description may now be indicated in several alternate methods but the subsidiary risk(s) must be indicated in parentheses following the primary risk as indicated in column 6 of the hazardous materials table of 49 CFR 172.101 (again this subsidiary risk indication is mandatory October 1, 2005 but may be used now.

Except as provided in this subpart, the basic description specified in paragraphs (a)(1), (2), (3) and (4) of this section

must be shown in sequence with no additional information interspersed. For example, "Cyclobutyl chloroformate, 6.1, (8,3), UN2744, PG II". Alternatively, the basic description may be shown with the identification (ID) number listed first. For example, "UN2744, Cyclobutyl chloroformate, 6.1, (8, 3), PG II."

In the example cited in the regulation, the chemical cyclobutyl chloroformate has not one, but two subsidiary risks. The Cyclobutyl chloroformate primary hazard is 6.1 (toxic) but the substance is also corrosive (8) and flammable (3).

Here are two examples of items used by the Department of Defense where two basic alternate descriptions are used:

For Chlorine gas, the following are acceptable basic shipping descriptions Chlorine, 2.3, (8), UN1017 or UN1017, Chlorine, 2.3, (8). For 20-40% Hydrogen peroxide, use Hydrogen peroxide, aqueous solution, 5.1, (8), UN2014, PGII or UN2014, hydrogen peroxide, aqueous solution, 5.1, (8), PGII.

The reader is cautioned that this is a change to the domestic DOT hazmat

shipping regulations to align them with international regulations. Nonetheless, this change may necessitate software changes to any automated

shipping paper systems you may be using.

References. 1. Title 49 Code of Federal Regulations (CFR), Part

172.202 2. Federal Register, Vol. 68, No. 147, pp 44991-45043, July 31, 2003.

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